



Education feature – May 2014

## **Rising demand for destratification**

*Stephen Bridges, Managing Director of international thermal destratification firm Airius, explores the rising demand for the energy reduction technology, as it becomes an ever-more frequent investment for schools, colleges and universities across the UK.*

Saving costs on heating and cooling is becoming an increasingly important goal for organisations everywhere, and schools, colleges and universities are no exception. With this in mind, it is no surprise that those within the education sector are among the thousands of UK establishments turning to the solution of thermal destratification.

The natural process of thermal stratification occurs in all buildings, resulting in dramatic differences in temperature from floor to ceiling. Thermal stratification is caused by hot air rising up to the ceiling or roof space because it is lighter than the surrounding cooler air. Conversely, cool air falls to the floor as it is heavier than the surrounding warmer air.



Current heating and cooling systems are typically over-delivering to compensate for this stratification phenomenon in an attempt to achieve the required temperature at working level (normally around 1.5 metres to 2 metres from the floor). Not only does this cost a considerable amount of money, it also increases harmful carbon dioxide emissions.

Thermal destratification is the process of mixing the internal air in a building to eliminate stratified layers and achieve temperature equalisation throughout the internal space. A typical installation includes a series of fan units, evenly spaced throughout the premises, working in conjunction to improve comfort, reduce heating and cooling costs, as well as carbon emissions.

According to utility giant DTE Energy, thermal stratification is the single biggest waste of energy in buildings today and stratification is an issue that has proven problematic to schools and colleges for a number of years. Over recent years, numerous systems have been developed with the sole aim of decreasing the temperature gradient from floor to ceiling in buildings like school halls and lecture theatres.

St. Thomas Aquinas School in Bowral recently installed eight destratification units to serve a newly constructed hall with a ceiling peak of 6.7m. The technology was chosen as a cost-effective solution to ensure that the building reduced its heating costs and carbon footprint.



Andrew Lowden, the project architect said, “The destratification systems are a great asset to the school hall. The main benefits include improved air circulation, a balance of temperature throughout the building, low running costs, silent operation and easy installation.”

There are a number of types of destratification fan on the market offering varying degrees of efficiency and energy savings. Over the past few years destratification fan technology has moved on dramatically from the traditional, ineffective paddle and box type fans to the new third generation Axial Turbine Fan.

Destratification systems offer substantial annual energy savings on both heating and cooling costs, with the market leading solution proven to reduce consumption by 20% to 50%. The systems maximise the performance of existing heating and cooling systems and equipment, and are designed to be installed alongside all types of heating and cooling equipment to

optimise the hot or cool air produced - creating uniform temperatures, whilst reducing energy costs and carbon emissions.

Recent developments have seen destratification systems add air purification and odour control technology that reduces viruses, bacteria, gases, mould and odours by more than 90 per cent, helping to create clean, healthy and odour free environments, a huge benefit to the UK's education sector.